

Amendments to the Claims

1. (Cancelled)
2. (New) A method for improving accuracy of particle parameter distributions, the particle parameter distributions being obtained by directing light onto particles and observing light scattered from the particles so as to observe special events, the method comprising the steps of:
 - a) selecting an integration time which is sufficiently short such that each special event creates a large characteristic change of integrated scatter signal parameters, when observed by a detector,
 - b) deriving data sets corresponding to particles, by integrating signals obtained from a plurality of detectors, using the integration time selected in step (a),
 - c) sorting the data sets obtained in step (b) into groups with similar characteristics,
 - d) rejecting groups with undesirable characteristics, while accepting other groups for further analysis,
 - e) calculating a particle parameter distribution from an average of said data sets, from each accepted group, to obtain a separate parameter distribution for each accepted group, and
 - f) combining the individual particle parameter distributions from said groups to produce a final particle parameter distribution.

3. (New) The method of Claim 2, further comprising selecting said special events from the group consisting of rare particles, large particles, and scatter signal defects.

4. (New) Apparatus for improving accuracy of particle parameter distributions, the particle parameter distributions being obtained by directing light onto particles and observing light scattered from the particles so as to observe special events, the apparatus comprising:

- a) means for selecting an integration time which is sufficiently short such that each special event creates a large characteristic change of integrated scatter signal parameters, when observed by a detector,
- b) means for deriving data sets corresponding to particles, by integrating signals obtained from a plurality of detectors, using the integration time selected in the selecting means,
- c) means for sorting the data sets, obtained from the deriving means, into groups with similar characteristics,
- d) means for rejecting groups with undesirable characteristics while accepting other groups for further analysis,
- e) means for calculating a particle parameter distribution from an average of said data sets, from each accepted group, to obtain a separate parameter distribution for each accepted group, and
- f) means for combining the individual particle parameter distributions from said groups to produce a final particle parameter distribution.

5. (New) The apparatus of Claim 4, wherein said special events are selected from the group consisting of rare particles, large particles, and

scatter signal defects.

6. (New) A method for improving accuracy of particle parameter distributions, the particle parameter distributions being obtained by directing light onto particles and observing light scattered from the particles so as to observe special events, the method comprising the steps of:

- a) selecting a data collection period which is sufficiently short such that each special event creates a large characteristic change in a function created in step (c) below, when observed by a detector,
- b) deriving data sets corresponding to particles, by digital sampling of signals obtained from at least one detector, using the data collection period selected in step (a),
- c) creating a function of each data set,
- d) sorting the data sets obtained in step (b) into groups with similar characteristics for said function,
- e) rejecting groups with undesirable characteristics, while accepting other groups for further analysis,
- f) calculating a particle parameter distribution from an average of said functions of said data sets, from each accepted group, to obtain a separate parameter distribution for each accepted group, and
- g) combining the individual particle parameter distributions from said groups to produce a final particle parameter distribution.

7. (New) The method of Claim 6, further comprising selecting said special events from the group consisting of rare particles, large particles, and scatter signal defects.

8. (New) Apparatus for improving accuracy of particle parameter distributions, the particle parameter distributions being obtained by directing light onto particles and observing light scattered from the particles so as to observe special events, the apparatus comprising:

a) means for selecting a data collection period which is sufficiently short such that each special event creates a large characteristic change in a function created by a creating means, below, when observed by a detector,

b) means for deriving data sets corresponding to particles, by digital sampling of signals obtained from at least one detector, using the data collection period established by the selecting means,

c) means for creating a function, of each of said data sets,

d) means for sorting the data sets, obtained from the deriving means, into groups with similar characteristics for said function,

e) means for rejecting groups with undesirable characteristics, while accepting other groups for further analysis,

f) means for calculating a particle parameter distribution from an average of functions of said data sets, from each accepted group, to obtain a separate parameter distribution for each accepted group, and

g) means for combining the individual particle parameter distributions from said groups to produce a final particle parameter distribution.

9. (New) The apparatus of Claim 8, wherein said special events are selected from the group consisting of rare particles, large particles, and scatter signal defects.